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The Cornell Countryman

MARCH, 1908

New York State College of Agriculture at Cornell University

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MARCH, 1903

CONTENTS

		Page
Cover Design—March		
Frontispiece—A Georgia Cotton Plantation		179
Farming in the Gulf States	*S. M. Tracy*	181
Practical Surveying	*E. T. Wilson*	184
Agriculture in Public Schools	*A. D. DeWitt*	187
Ranch Life in the Foothills	*M. W. Evans*	190
Advantages and Disadvantages of Poultry Culture	*A. A. Brigham*	193
Some Field Experiments With Black Rot of Grapes	*Donald Reddick*	196
The Country Road and the Pathmaster	*J. Demary*	199
Ether and the Germination of Seeds	*J. Taubenhaus*	201
Editorials		
To a Graduating Class		202
A Desirable "Stitch in Time"		202
The Stage		203
Wanted—A Name		203
Erratum		203
General Agricultural News		204
Campus Notes		205
Former Students		207

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COURTESY OF THE U. S. DEPT. OF AGRICULTURE.

PICKING COTTON ON A GEORGIA PLANTATION

The Cornell Countryman

VOL. 5 MARCH, 1908 NO. 6

FARMING IN THE GULF STATES.

By S. M. Tracy

Bureau of Plant Industry, Biloxi, Miss.

WHEN the editor of the *Countryman* asked me to write something on "Farming Conditions in the South" I do not think he realized that he was asking me to cover a region which includes the Gulf Coast with its fifty or more inches of rainfall, the South Texas country which is almost rainless, the mountains of the Carolinas and the rice lands of Louisiana, the hemp fields of Kentucky and the orange groves of Florida, and all to be described in one short letter. The country is too large and too varied, and I shall write only of the extreme southern portion of the country east of the Mississippi river.

The climate is, to me, much more pleasant than that further north. The winters are mild, the temperature seldom falling as low as zero in northern Mississippi and Georgia, while twenty-five degrees is regarded as very low along the Gulf Coast, and from Central Florida southward frosts are very rare. The summer temperature averages higher than in New York, though it never reaches the extremes which are often seen in the North; 100° is rare in any part of the Gulf States, and near the coast 95° is very unusual. Sunstrokes never occur here and the nights are always cool. The summers are long and sometimes one wishes for a breath from the mountains, but the heat is bearable when one is always sure of a cool night to follow. The rainfall varies from about fifty-five inches near the coast to about forty inches in northern Alabama, or, roughly speaking, it decreases about four inches for each 100 miles remove from the coast. This is quite evenly distributed through the year, so that long drouths are unknown. The mild climate with the abundant and well-distributed rainfall makes it possible to cultivate the ground at any season and to have crops growing and maturing through the entire year. The ground, even in the northern part of the region, is never frozen so as to interfere with plowing more than two or three days, and as soon as one crop is removed another can be planted, so the fields need never be idle. In fact it is the common practice to grow at least two crops, and often three, except in fields used for growing cotton. In other words, the climate here is such that ten acres can be made to produce as much as twenty acres in regions where only one annual crop can be grown.

The soil is extremely variable in quality. Probably there is no other equal area in the world which has a more fertile and productive soil than that of the Yazoo Delta region which covers about 8,000 square miles, though the river and creek bottom lands in all parts of the South are nearly as good. The hills in the pine woods region extending from Georgia westward to Louisiana, are less fertile and are inclined to wash in heavy rains, but with proper management they produce excellent yields of cultivated crops, and are among the best of pastures. Immediately along the

coast and in the larger part of Florida the soils are generally sandy, though in many places they are very fertile, and all are easily worked. Many who do not understand the conditions regard southern soils as being poor and unproductive because of the large amounts of commercial fertilizers used here, but that is a mistaken judgment. All good farmers in the North use manures, and all good farmers in the South use them when they are available, but the supply is not sufficient in a region where stock raising is a minor industry, and where the larger part of the fields are in cultivated crops, so we use commercial fertilizers, finding them as profitable as manures, and the cost per acre no greater. I know of fields which have been planted in cotton every year for more than fifty years and which are still producing good crops, though they have never been fertilized in any way.

Cotton is the staple crop in nearly the whole of this region. The expense for cultivation is about the same as for corn, though the gathering of the crop is more expensive, usually being from ten to fifteen dollars per acre. The standard yield is one bale (500 pounds) per acre, and the price is usually $50 to $75 per bale, though cotton of extra quality commands double those prices. The better the quality of the cotton the more skill is required in its production, so that intelligent work is as profitable here as elswhere. A yield of a bale to the acre is as good a crop as is thirty bushels of wheat, and a price of ten cents per pound for the cotton is as satisfactory to the grower as is one dollar per bushel for wheat.

Grain crops are grown less extensively than further north, and the yields secured are not usually as in Illinois and Iowa, but the prices are so much higher that they are fairly profitable. Most farmers grow enough oats and corn for their own use, though wheat is seldom grown except for hay and for winter grazing. Corn grows well and its cultivation might be increased almost indefinitely, but the grain is somewhat difficult to keep through the winter in good condition on account of the insects. The largest yield of corn on record, 256 bushels per acre, was made in South Carolina, and the Census Report for 1890 gives the largest average yield from any county in the United States as having been made in Issaquena county, Mississippi. I know of no line of farming which would be more surely profitable here than the breeding of varieties of corn which would be suited to our climate and conditions. I do not know a single professional corn breeder south of the Ohio river, and there is an unlimited demand for good seed grown in this section.

Hay of some kind can be grown on all soils. While we do not have the Timothy meadows of the North we have crops which make equally good hay. Alfalfa does well on all heavy, lime soils, often yielding six tons of dry hay per acre. Red clover does well on the same soil but seldom lasts more than two years, a common practice being to sow it in September, make three cuttings the next year and one in April or May of the following year, which takes it off the ground in time for planting corn. On the more sandy and less fertile soils cow peas can be grown during any two or three months of warm weather when the land is not needed for other purposes, and will make from one to two tons per acre of a hay which is fully as valuable as that from red clover. Johnson grass and Bermuda are the common hay grasses on heavy soils, the former making a very heavy yield of a hay similar to that from very closely planted sorghum, and that from the latter resembling Kentucky bluegrass or redtop hay. The Yearbook of the Department of Agriculture for 1906 gives the average yield of hay per acre in Georgia, Florida, Alabama, Mississippi and Louisiana as 1.79 tons per acre against an average of 1.35 tons per acre for the whole country, and this has an average farm value of $23.68 against an average of $13.95 per acre for the whole of the United States. Such figures tell their own story.

COURTESY OF U. S. DEPT. OF AGRICULTURE.

COWPEA HAY ON TERRACED FARM.

Owing to the very long grazing season the raising of live stock, especially cattle, hogs and mules, is very profitable, as the supply of animals either for food or for work is not equal to the demand. While thousands of cattle and hogs are grown with absolutely no feed except such as they can find for themselves on the open range, such animals are always "scrubs" and must be sold for scrub prices. By planting a successson of crops it is easily possible to have good grazing during the entire year, even through the winter. Milk sells at high prices, usually ten cents per quart, and butter for from 30 to 40 cents per pound so dairying is quite profitable. Mules are the best animals for negro laborers; they can be grown almost as cheaply as steers and fairly good ones are worth $150 to $200 each. Hogs can be grown very cheaply on the constant supply of green feeds, and pork can be put in the barrel at a cost of not more than two cents per pound. I have seen this done repeatedly.

The cost of building is much less in the South than in the North. Lumber costs only about two thirds as much per thousand feet and much less is used, as double floors and wall are not needed. For barns and stables we need only a shelter from sun and rain, as stock never suffer from cold. Living expenses are also less. Prices for food are about the same, but clothing costs much less as we do not need the expensive wraps and furs which must be worn in northern winters. Heavy carpets are commonly replaced by rugs, and fuel costs little. The country roads are not usually as good as those in regions where stone is more abundant, but they are being improved rapidly, and during the last five years more railroads have been built in the Gulf States than in any other part of the country. Of course the price of land varies greatly with its character, distance from railroad and other conditions. In many localities wild lands from which the best timber has been cut can be bought for from two to four dollars per acre, while cleared lands of better quality and in more desirable locations often bring fifty dollars or more. Values are increasing rapidly but there are still many opportunities to purchase good farms for from fifteen to twenty-five dollars per acre.

The labor question is always a serious matter, but is no more troublesome here than elsewhere. Negroes are almost our only laborers, and while not generally as intelligent and reliable as good white laborers from

northern Europe, they are less expensive and will accomplish about as much for the same amount of money. They put in long days, always board themselves and can be called upon at any time for any work or personal services.

Some time ago I had occasion to quote, from the Report of the Eleventh Census, a few facts regarding farm values and profits in Mississippi, and some of the figures given then may be interesting here. According to that report the average value of farming lands, including both improved and unimproved, is $25.55 per acre for the whole United States, and only $9.50 per acre in Mississippi. In other words, $1,000 will purchase 39 1 acres of average farm land, but will purchase 105.3 acres in Mississippi. The average value per acre of farm products is $6.88 for the whole country, but $10.70 per acre in Mississippi. The gross earnings of the capital invested in farms and farm equipment is 15.4 per cent for the whole country, but is 43.8 per cent in Mississippi. I do not have the figures at hand for a similar comparison for other States, but those given above are fairly representative of conditions in all the Gulf region. Any section where so little capital is needed in making a start, and the returns on the investment are so large is the place for which every young man of moderate means is looking. I do not advice any one to come here blindly, for he will find many things not to his liking and will have the discouragements and difficulties which every new settler in any country is sure to meet. In no case should he decide to locate here until after he has seen the country and can judge conditions for himself. Correspondence can give little information about definite localities.

For the young man who has a willingness to work, an ambition to make a pleasant home and a place for himself in the world, and sufficient pluck to carry him through, I know of no better openings than can be found in the region bordering on the Gulf of Mexico.

PRACTICAL SURVEYING

By Elmina T. Wilson, C. E.

LINEAR measurement is the basis of all surveying, whether made to determine areas, fix boundaries, or to secure data for the making of maps, and all measurements of length are supposed to be made on the horizontal. The distance between two points is not only a straight line but a level line. The surveyor's chain (66 feet long) is often used because of its relation to the acre and to the mile, one acre being ten square chains and one mile being eighty chains. This chain is divided into one hundred links and distances measured by it are recorded as so many "chains and links." The engineer's chain is similarly constructed but is one hundred feet long with one hundred links and the distances measured are recorded as feet and decimals. On account of the large number of wearing surfaces a chain should be frequently compared with a standard length. The error of chain measurements is usually estimated to be about one foot in five hundred feet, or, with care, one foot in one thousand feet.

When greater accuracy is desired a steel tape should be procured, those most commonly used being fifty and one hundred feet long and divided into feet and inches, or, feet and tenths of a foot, as desired. The error of tape measurements, if carefully made, is estimated at about one foot in five thousand. The pull exerted on either tape or chain should be great enough to make the stretch balance the shortening due to the sag.

Two men with a tape, or chain, a plumb line, a color-pole, and a set of eleven pins are required in measuring horizontal distances. The head-chain-

man carries the front end of the chain and starts with ten pins; the rear-chainman takes the other end of the chain and the eleventh pin is used to mark the starting point. The rear-chainman must keep the head-chainman in line by sighting ahead to a fixed point or the color-pole set up for this purpose; for distance, the "lining in" by the eye is accurate enough. The head-chainman, after being lined in, stretches the chain taut, puts in a pin and calls "all right;" the rear-chainman takes the pin at his end of the line and they proceed to the next chain length. Just before reaching the next pin the rear-chainman calls out "chain" to warn the man ahead that it is time to stop. After ten chains the head-chainman will be out of pins and the rear-chainman brings forward ten pins, which are counted by both men and recorded by both in their note-books. There is always one pin in the ground which is never counted.

When the ground is not level care must be taken to keep the chain horizontal. The plumb line is used by the head-chainman, when going down hill and by the rear chainman in going up hill, to transfer the measurements to the ground. If the slope is steep the chain is stretched its full length but the measurements are made in sections, the length of which will depend upon the steepness of the slope. All pins used at these intermediate points must be returned at once to the head-chainman to avoid errors in counting.

A complete survey can be made by use of the chain alone if a point, as P in Fig. I, can be selected from which all corners of the plot may be seen. The four sides and the four dotted lines should be measured and from these lengths the area of the four triangles can be computed and the boundaries can be plotted. No matter how many sides the figure has, this method can be used. If the lengths of the three sides of any of these triangles be represented by "a," "b" and "c" and the sum of these sides be represented by "p," then the

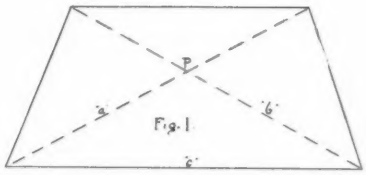


Fig. I

area of the triangle, "A," can be computed from the formula,

$$A = \sqrt{p\,(p-a)\,(p-b)\,(p-c)}.$$

The sum of the areas of all the triangles will give the area of the entire plot.

If it is desired to run a line at right angles to a given line advantage can be taken of the fact that if the lengths of the sides of a triangle are in the ratios 3:4:5, one angle of the triangle will be 90°. A triangle can be constructed with the chain and having the sides 15, 20 and 25 links long, or, 24, 32 and 40; the longer the sides of the triangle, the more accurate the right angle. A steel tape cannot be bent to sharp angles like a chain, so from the point P, Fig. II, of the given

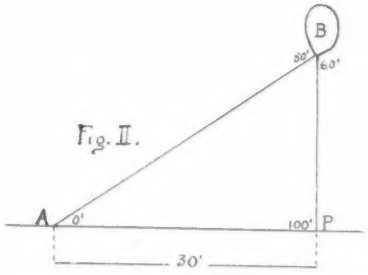


Fig. II.

line where the right angle is to be constructed, measure thirty feet along the line to the point A; place the zero end of the one hundred foot tape at A, holding the other end at P, bring the fifty foot and the sixty foot marks together and stretch the tape taut, this will locate the point B and the line P B will be perpendicular to the given line P A. By fastening the ends of the tape at the two points on the given line, one man can do all the work.

A line can be run through a given point P, Fig. III, parallel to a given line A B by dropping a perpendicular from the point to the line and from

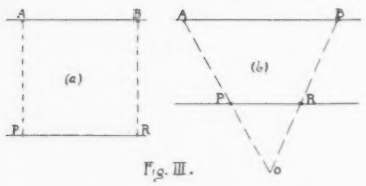


Fig. III.

any other point, as B, on the given line erecting a perpendicular B R of equal length to P A; or, assume a line A O through the point P and make O B=O A, then measure off O R=O P and the line P R will be parallel to the given line A B.

An angle can be laid off, by means of the tape and a table of natural tangents, with considerable accuracy. Begin at the apex A, Fig. IV, and on one side of the angle measure off any length A B, say one hundred feet, as a base, at B erect a perpendicular to the line A B. The length of this perpendicular B C will be equal to 100 times the natural tangent of the required angle. Join C with A, and the angle C A B is the required angle. If the angle is greater than 90°, erect a perpendicular to get the 90° and lay off the balance of the angle by this tangent method.

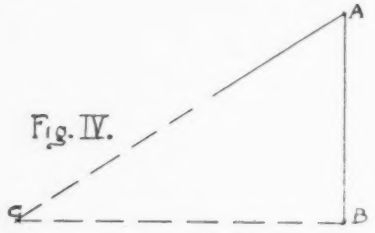


Fig. IV.

The surveyor's compass is an instrument for determining the direction of a line with reference to the direction of a magnetic needle. The needle is balanced at its center on a pivot so that it swings freely in a horizontal plane. This pivot is the center of a horizontal circle which is divided into degrees and half degrees and numbered from two opposite zero points each way to 90°. The brass frame which holds this graduated circle has two vertical sights so placed that a plane through them also passes through the pivot and the zero points of the circle. This frame is attached by means of a ball and socket joint to a tripod or to a Jacob's staff. Two levels, at right angles to each other, are attached to the frame and are used to keep the graduated circle in a horizontal position. As the magnetic needle points in a fixed direction the angle between this meridian and a line located by means of the vertical sights can be determined by the graduated circle; this reading is called the "magnetic bearing" of the line. By means of the bearings of two lines the angle between them can be determined. Bearings are read from 0° to 90° from the north or south points, the quadrants being designated by the letters N E; S E; S W; or N W. The pocket-compass is a small hand instrument by which these same bearings can be obtained but not with such accuracy.

In calculating the angles between these same lines from their bearings it is necessary to keep in mind the relation the lines have to the meridian, i. e. the angle A O F (Fig. V) is found by taking the difference of the bearings; the angle A O D, by taking the sum of the bearings; the angle A O C, by subtracting the sum of the bearings from 180°; the angle A O E by subtracting the difference of the bearings from 180°.

Great care should be taken that no iron or steel is left near the compass as even a bunch of keys or the wire in a stiff hat will appreciably effect the needle.

The level is an instrument used to determine the relative elevations of different points. A telescope, to which a spirit-bubble is attached, is supported on a plate with an adjustable head to be screwed on a tripod. By means of the adjusting-screws of the head the plate is made horizontal and the intersection of the cross-wires in the telescope will sweep out a horizontal plane for each position of the instrument. The level-rod is divided into feet and inches, or, feet and decimals of a foot, and is provided with a target, carrying a vernier, which can

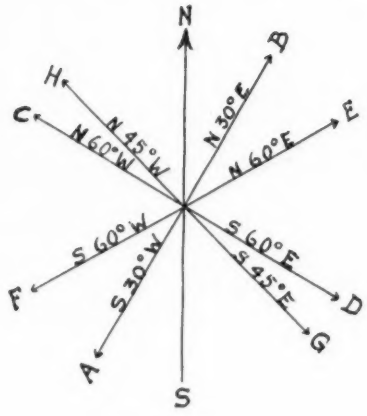


Fig. V.

be clamped in any position with a thumb-screw. All readings are referred to a fixed datum or "bench mark" (B M) the elevation of which is known or assumed. The instrument is set up, leveled, the rod is held on the B M, the target carefully set and read by both rodman and levelman and recorded by both. This rod reading added to the elevation of the B M gives the height of the instrument (H. I.) and all intermediate readings of the rod when subtracted from the H. I. give the elevation of the ground at that point. In taking a line of levels for drains or any such purpose the rod is held on the surface of the ground, read to the nearest inch only and these readings recorded only once for all intermediate points; but at all "turning points," those points where the instrument is to be changed to a new position, a stake is driven for a solid support to the rod, the target is set carefully and read as closely as possible, this reading being recorded by both men. When the work is finished the second set of readings is used to check the elevations of all H. Is. In selecting the turning points and the new position of the instrument some errors of adjustment will be eliminated if the new position of the instrument is about the same distance from the turning point as was the old position.

The transit is an instrument for measuring horizontal and vertical angles. It is usually provided with a compass as the magnetic bearings are often useful in locating errors if any are made. The horizontal circle is graduated to half degrees and a vernier is provided which will read at least to minutes of the arc.

Several reliable instrument makers are putting out light instruments at moderate prices with which all the problems arising in Farm Surveying can be solved with sufficient accuracy. Such a one is manufactured by Bostrom and Brady, of Atlanta, Ga. The level may be used on foundations, settling floor timbers, laying out drains, irrigation ditches, etc., and the compass for use in relocating boundary lines, measuring angles, or, subdividing tracts of land.

AGRICULTURE IN PUBLIC SCHOOLS

By A. D. DeWitt

Superintendent of Schools, St. Louis, Mich.

AS we were the first high school in Michigan to offer a full course in Agriculture, we are called upon to state the results of three years' work along this line and will describe our course of study with our methods of applying it, etc. Let me state at first that our city has about 3,000 inhabitants, is situated in a fertile farming region, and has a school fairly equipped with chemical, physical, and botanical laboratories.

The business world has long looked to our institutions of education for its telegraphers, physicians, accountants, stenographers, engineers, lawyers, teachers, etc. To whom is the greatest industrial interest of our country to turn for its leaders, skilled in its particular line? Educationally, has

our farmer had a square deal? We think not. One-half of the pupils in the public schools of the United States are in the country schools. Nine-tenths of this great army of American youths finish their education in these rural schools. Where can the farmer's son learn to produce two blades of grass where one formerly grew? Who is to teach him to avoid the mistakes of his fathers? Where will he learn love and respect for this, the grandest of all work, and the work upon which the weal or woe of our country depends? Let him once realize the importance and dignity of his father's vocation and he will not be so anxious to leave the broad and beautiful fields of his father's home and confine himself to the crowded, unhealthy shop or factory of the city.

In our experiment of placing a good agricultural course in our school we hoped to answer, in our mind at least, some of the above questions. We have been more than pleased with the results. In our high school of about eighty pupils, the first year seven elected this course, the second year seventeen, and this year thirty-two. It may be of interest to note that the city pupils are as anxious to know about the agrarian interests of our country as are the farmers' boys. A majority of every class has been composed of young ladies.

Now as to what we try to teach. We teach some of the mechanical and chemical properties of the soil, soil-water, saving soil moisture, draining, etc. We try to teach the pupil to discriminate between good and poor soil, the adaptation of different soils for different purposes, the reclaiming of pine barrens and worn out soil, rotation of crops, the value of the leguminous fertilizing plants (especially clover), and how plants feed and grow. Most of this work is done by experiments carried on either in our laboratories or out of doors. Our Board of Education has recently purchased a piece of land near our high school building and we hope to introduce the school garden very soon. Germinating, selecting and testing seeds have proved of great interest to our pupils. We might say that this work is done in the course only after the pupil has had one year's work in botany and nearly this amount of work in chemistry. We have aimed to interest our pupils in floriculture, and many a home and its surroundings in and about our city prove that our efforts have not been altogether fruitless. The vegetable garden has received some attention as to what to plant, when to plant, how and when to cultivate, and how it can be laid out to be cultivated cheaply and effectively. The orchard, its planting, pruning, grafting, cultivation, spraying, etc., we have tried to teach thoroughly. The insect and fungus enemies of the orchard and the most common crops have been studied by use of the compound microscope. The latest approved methods of coping with these pests have been learned by our pupils. This work has been done largely by the laboratory method of teaching.

Here we present our course of study:

	Hours
First Year: 1st semester	
Physiology	5
A. History	5
English Grammar	5
Algebra	5
2nd semester.	
Bookkeeping	5
Algebra	5
English Grammar	5
M. History	5
Second Year: 1st semester.	
Physical Geography	5
English Composition	4
Botany	6
The Soil; Origin, Drainage, Capillary Action	4
2nd semester.	
Review Arithmetic	5
English Composition	4
Zoology	6
The Plant; Food, Propagation, Diseases	4
Third Year: 1st semester.	
U. S. History	5
Physics	5
English Literature	4
Orchard, Garden and Field	6

2nd semester.

U. S. History and Civics	5
Chemistry	5
Review Algebra	5
Farm Animals, Farming, Gardening	5

We invite suggestions and criticisms of the above course.

So much as to what we do; now as to how we do it. As has been stated above, this work is done largely by experiment and in the open field. We use a text-book to some extent which could be used in any country school, and which is one of the many excellent books on this subject. It is the text of Stevens, Burkett, and Hill and is published by Ginn & Co. Any teacher in any school of the country can make this work a success if he will buy three or four good books on the subject and read it up carefully. He will become fascinated with this very practical subject. As this article is intended to be useful to the teacher we will here suggest a few books and the names of the publishers. There are many others equally as good. Goff and Mayne—First Principles of Agriculture, the American Book Company; Jackson and Daugherty—Agriculture through the Laboratory, Orange Judd, New York; Lyon and Montgomery—Examining and Grading Grains, Ginn and Co; Bailey—Elements of Agriculture, the Macmillan Co.; Roberts—The Farmstead, the Macmillan Co. In these books many simple experiments are suggested.

We are indebted to President J. L. Snyder and Professor Clinton D. Smith, of the Michigan Agricultural College for many helps and suggestions along this line of work. The above gentlemen have put themselves on record as standing ready at *any* time to help *any* teacher in this work, and we have found their assistance of the greatest value. Our State educational paper, the Michigan School Moderator, published last year a series of simple, inexpensive, but very interesting experiments along this line, furnished by the professors of our most excellent Agricultural College.

Mr. Dick J. Crosby, our government expert in agricultural education and Dr. A. C. True, both of the Department of Agriculture, will lend all the aid possible to teachers of this subject and agricultural reports are published for distribution by the above department. These may be had for the asking and are of great educational value. We have used with profit the bulletins of our state experiment stations which also are free.

Many other suggestions could be made but space forbids. Suffice it to say that any teacher in any school (country district schools included), if he goes at this work with earnestness of purpose and determination, can make it one of the most fascinating subjects in his curriculm.

With Nature Study, Experimental Botany, School Gardens, Manual Training, Domestic Science, and Agriculture in our American schools, we can teach that love of nature and home, that respect for honest labor that is necessary for the perpetuity of our beloved American nation.

"Come out into the light of things,
Let nature be your teacher
One impulse from the vernal wood
May teach you more of man
Of moral, evil, and of good
Than all the sages can."

Much more could be said upon this subject, but as we were asked to relate our experience in teaching agriculture we will not enter other fields. In conclusion, let me say to my fellow teachers that this paper comes from one on the "firing line," who believes most thoroughly in the importance, feasibility, and practicability of teaching agriculture in our country schools as well as in our high schools. The writer would be pleased to answer any questions, or aid, in any way he can, his fellow teachers in this work.

RANCH LIFE IN THE FOOTHILLS

By M. W. Evans, '06
Bureau of Agrostology

COTTON, BUL. 75, BUREAU PLANT INDUSTRY, U. S. DEPT. OF AGRICULTURE
A MOUNTAIN MEADOW BEFORE BEING SOWN TO TIMOTHY

DURING the latter part of June, 1907, I spent two days in one of the broad irrigated valleys of central Washington, located just east of and within sight of the snow-capped ranges and peaks of the Cascade Mountains. While there I had occasion to go up to one of the smaller mountains situated to the northward within a distance which could be driven over and back in one day. The irrigated lands of this vicinity lie in a broad, basin-like valley, which was originally too dry to support much vegetation except a growth of sage-brush. At present, however, this sage-brush has been cleared away and the land put under irrigation. This soil, an almost barren waste until supplied with water, now produces immense crops of timothy and alfalfa hay.

After driving perhaps twelve or fourteen miles through this flourishing farming region, I came to where the land begins to rise, and irrigation ceases. At the last house on the outer limit of the irrigated valley, the people informed me that the Westbar Ranch, for which I was bound, was some ten or twelve miles farther up the mountain, and that I could find it by following the wagon road or trail which led that way. There is no house along this road for the entire distance, and I was told that it would be only a chance if I should find any of the ranchers at the ranch house when I arrived there.

To one who is accustomed to the comparatively uniform local climatic conditions of the East, the changes passed through in ascending the mountain were interesting. Down in the valley, where the elevation is about 1500 feet, the rainfall is sufficient to support only a semi-arid vegetation. As I drove up the trail, the first change I noticed was that the sage-brush disappears and its place is taken by wild bunch grass. Not far up the mountain are groups of yellow pine, small and scattered. Farther up the ascent the trees become larger, closer together and the forest occupies a larger proportion of the ground. In the open prairies, which alternate with the stretches of timber, were several wild flowering plants, the most conspicuous ones at that season being wild lupines. I remember several patches, some of which were perhaps

nearly a quarter of an acre in area, profusely in blossom, showing every gradation in color from white to dark blue. A little farther on, the road passed over the summit, at an elevation of 5250 feet. Here the rainfall was so much greater than in the valley, 3500 feet below, that instead of a semi-desert condition, the open stretches of meadow between the forests were as beautiful and green as any lawn ; and all this change within less than twelve miles.

I had no trouble in finding the corral and ranch house, and was still more pleased to find that three of the herdsmen happened to be camped at this place, and had not yet left for the range after eating their noon meal. I unhitched the team and fed them in the log stable, while the man who acted as cook kindly prepared for me a dinner of fried bacon, cold soda biscuits, syrup and coffee. As he was anxious to be after the cattle, he soon rode away and after eating, I walked over to another portion of the range about one-quarter of a mile distant.

Soon after I had left the ranch house it began to rain and by the time I had secured the desired information and returned to camp, I was quite wet. I hunted up some wood, made a fire in order to dry out my clothes before starting on the long drive back to the station, and soon was joined by two of the rangers, who, also, had returned to wait until the shower should end. As we sat there, watching through the open door, the gray clouds which seemed to almost hang on the higher slopes, and listening to the raindrops pattering on the shingles above, we easily fell into a mood for conversation. I was soon an interested listener, while the two herdsmen told me of the business they follow and of the life they live.

It must not be understood that the type of ranching here is typical of the ranch life in the open range on the Great Plains east of the Rockies. Different conditions exist there. However, great numbers of cattle, sheep and horses are produced west of the vast grazing region of the Plains, in the valleys and on the mountains which are not heavily timbered, or are not too rough or inaccessible to utilize for grazing purposes. Conditions as found on the Westbar Ranch would be more or less typical of the stock raising business as carried on throughout the mountain regions. On this ranch, fences enclose quite a good many square miles, or sections of range. To the east, the land slopes down toward the Columbia River. Down in the valley, where the climate is warmer and where fodder crops are grown by irrigation, are the winter headquarters. The log-house where we stopped is one of the several camps scattered over the summer range.

As soon as vegetation has made some growth on the lower foothills, the sheepmen start out, gradually taking the flocks a little further back toward the mountains. After the sheep have been on the range for some three weeks, the cowboys come with the cattle, which are kept about three or four weeks behind the sheep. The sheepmen or cowboys will stop for a short time at the camp nearest the place where the stock is feeding, then will move to the next camp as the flocks or herds move further up. During the spring when the soil is moist from the frequent showers, particularly up in the mountains, the growth of grasses is very rapid indeed. When I was there the sheep had been grazed on that part of the range near this particular camp nearly a month earlier, while the cattle had just recently reached this location. The wild grasses and a species of clover resembling White Clover were several inches high and of an unusually fresh, green color. Three or four miles further back and higher up in the mountains, the grazing was shorter because of the cooler climate. One of the men told me that the day before he had come over snow three feet deep on the north slopes a few miles farther up in the mountains.

The cattle are kept in this enclosed area all summer. The sheep, however, are taken out on the open range early in July, and graze westward

through the Cascades or northward for a hundred miles or more toward British Columbia. As this open range is now included within a forest reserve, the stockmen must comply with certain regulations in order to use it for pasturing their stock.

Notwithstanding its loneliness, there is a great deal that is pleasant and attractive in the life these cowboys and sheepmen live. Mountain trout are abundant in the streams, and there is some game in the woods, one of the men had killed a black bear a few days before my visit. The outdoor life, the varied scenery, and the bracing mountain air, are reflected in the ruddy complexion and the clear eyes of the herdsmen. These men are close observers, and understand a great deal that is going on in the forest and range. Those whom I met appeared to be intelligent, trustworthy men, as the nature of this work demands.

Almost unnoticed, the rain had ceased, and the gray clouds had given way to patches of blue sky. We had talked until after five o'clock and the cowboys were anxious to be back with their herds while I wished to be over the lonely mountain road before dark, as well as to catch the 9:20 train at the station twenty-five miles away in the valley below. It was with regret, that I had to decline the invitation which the men gave me on leaving, to come back sometime and spend two weeks in hunting, fishing, and riding with them, and learn more of the forests and mountain range.

COTTON, BUL. 75, BUREAU PLANT INDUSTRY, U. S. DEPT. OF AGRICULTURE

THE MEADOW AFTER TWO YEARS

ADVANTAGES AND DISADVANTAGES OF POULTRY CULTURE

By Arthur A. Brigham

Brookings, South Dakota

AT the close of the last century, the annual yield of poultry in the United States was reported by the statisticians to be nearly $300,000,000. That was a long time ago. Today we need have no doubt that the value of the annual poultry production is over $400,000,000. America's business hen is not a large bird but, judging by her works, she represents a very important branch of agricultural industry. We shall not be straying from the truth if we say that she represents a calling as much and as well as the cow or the sheep.

Since the first American poultry school was started in Rhode Island ten years ago, college after college has taken up the work of poultry instruction, and farmers' institutes have, more and more, called for lectures and demonstrations in modern poultry keeping. Now comes report of the successful course of a special poultry instruction train, run over the railways of a western state, carrying typical specimens of fine fowls, samples of modern poultry appliances and teachers to instruct the farmers, gathered at the stations along the route, in the best methods of poultry management.

Poultry culture is already classed as an important and productive industry and the possibilities of its future development are just beginning to be understood. If then there are to be numerous openings for poultry culturists it may be well to consider some of the advantages and disadvantages of the calling.

First is healthfullness. Men and women, in these strenuous times, are coming to realize that the gaining of wealth at the expense of health is on the whole a losing proposition. That poultry keeping under reasonable, sensible conditions is a healthful occupation may be considered settled because of the fact that many individuals in a poor state of health, have taken up this work and made it a means of gradually regaining and increasing their health, strength and vigor.

Secondly its attractiveness. When dealing with fowls we have to do with living creatures. They appeal to our liking for something which has activity, movement, life, and therefore are interesting to us. Is there anyone in this great world who does not find a fluffy lively little chick beautiful and attractive? How could the poetry of Eastertide be expressed were there no eggs or downy chicks? If additional evidence of the attractive quality of our birds is desired, let the searcher after proof go to some great poultry show, like that in New York at Madison Square Garden, and watch the crowds of people who come to the exhibition for the sake of seeing the beautiful plumage, symmetrical forms and graceful movements of the fine fowls. If further proof is needed, let the doubting one sit down before the glass door of an incubator when the chicks are hatching and then try to tear himself away, while the eggs are snapping and cracking and the little chicks are breaking channels around the shells, bursting their bands and rolling out and about. The person who never had the hen-fever has not really been properly raised. Something is lacking in his training and education. He is not complete. The human who early develops into a chicken crank and remains one for life which (which necessarily follows) secures at least one source of enjoyment, which is satisfying and tends to perennial peace.

This subject has indeed a sociological side. Many a man, choosing poultry as his hobby, has been thereby kept from seeking recreation and excitement in questionable ways and places. Many a lad, becoming inter-

ested in chickens and their culture, has been saved through these home attractions from the allurements of the saloon, fast companions and other temptations. More than one country boy has been held by his flock of fowls upon the farm and finding pleasure and profit in them, stays there and follows farming—the best calling on earth. Many a woman in the country has gained peace and pin-money raising chickens and turkeys and no one can do this work quite so successfully and satisfactorily as she. Poultry is irresistible to the great majority of people and its popularity is finally proved beyond a peradventure by the lonely, exceptional persons who "hate hens."

Poultry products are readily transportable even for long distances. Being perishable products as well as valuable, they will bear considerable cost for careful carriage and prompt delivery in fresh condition, to cash purchasers. If the location is favorable for the delivery of eggs and dressed fowl to families not too widely separated, a retail route may be established and middlemens' commissions avoided.

The poultry industry lends itself to specialization to suit the peculiar local conditions, the market demands, the qualifications of the producer and all the other circumstances of a given place and person. Actual cases may be cited in illustration of this important feature of poultry culture. In one section the raising of soft roasters is the main business on farm after farm and a nearby city takes the product at paying prices. These poultry farmers do it differently from ordinary poultrymen. They are hatching chickens by the thousands when other poultry keepers are letting their chickens get ready for the fall market. They are growing their autumn hatched chickens when others are killing and marketing their poultry. They are finishing and selling their plump roasters in the spring months when most poultrymen are hatching chicks.

Other specialties include squab broiler chicks which, hatched and raised in winter and killed at eight to ten weeks old may never know what it is to be out of doors, running by fast route from inside the egg to inside the brooder to inside the epicure; selling incubator chicks just after hatching, sending them by express, perhaps a thousand miles to the buyer, in safety and saving the latter all the trouble of hatching.

Poultry keeping may be carried on advantageously in combination with other kinds of business, for example—fruit culture, dairying, bee keeping or almost any branch of agriculture or horticulture. In these days the saving of the wastes and utilization of the by-products has changed more than one struggling enterprise into a profitable undertaking. In some of the combinations of poultry keeping and other branches of farming, by-products and would-be-wastes are used by the fowls and made into valuable, saleable poultry products. Rightly managed the fowls improve and enrich the land. Their excrement, if taken care of properly, is a valuable manure of special utility in fruit orchards, for grass land, garden vegetables and foliaceous crops of all kinds.

Wherever poultry is kept in large numbers there is illustrated the biblical saying "In the sweat of thy face shalt thou eat bread, till thou return unto the ground." If fowls do not perspire, pushing practical poultrymen do. There is plenty of hard work in running a poultry plant, which may be considered a disadvantage by some people.

There is no scheme of life insurance covering poultry risks and sometimes, in spite of every precaution, epidemic disease sweeps through the poultry yards leaving death and destruction in its wake.

Uncle Sam's census enumerators have never taken account of the little flocks kept in the back yards of thousands of homes in city suburbs, towns, villages and rural dales. Even the tax assessors usually pass them by. Their products are mostly consumed in the home with which they are connected. The advantages of this kind

of poultry keeping must be great when so many families practice it. Clean, fresh, limpid eggs in constant supply and an occasional tender chicken or plump fowl for the table, all for very little outlay of money and labor, are inducements that lead numerous householders to "keep hens." The wastes of the household may supply a large part of the food required by the fowls. If, happily, there is a garden connected with the home, its surplus crops and even its weeds may be used to help balance the poultry rations.

When the head of the household is interested sufficiently to take the charge of the fowls wholly upon himself, several things are gained. He usually secures pure-bred fowls of good quality and takes pride enough in his flock to provide neat attractive quarters for them, manages them systematically, feeds them properly and gains good results. Thousands of sensible men are doing this and they are better men in many ways because of this interest and effort. Their homes have thereby added attraction and comfort. Sometimes the housewife is the family poultry keeper, in which case the fowls are sure to do well. They feel compelled to show their appreciation of the womanly care and management which untiringly, patiently and conscientiously supplies their wants and seeks to keep them comfortable.

In case neither of the parents choose to care for the fowls, this duty may fall to the lot of the son or daughter. Some of the nicest family flocks in the land are in charge of the boys and girls of our country and they are showing what young Americans can do with hens.

Disadvantages:—About all of the advantages just named turn to disadvantages if the appointed keeper of the family flock is not interested in the birds, dislikes to care for the new and fails to attend properly to their comfort. Carelessness and neglect allow filthiness to prevail, parasites to prosper and disease to enter the flock. The birds and their faithless overseer both go from bad to worse.

Another thing that will defeat the good purpose of the poultry keeper, even if he is interested and earnest in the work, is the lack of adequate, convenient, comfortable quarters, including properly fenced yards. Otherwise crowding and discomfort, extra and useless labor, and small returns, change the birds into a burden and a plague. Sometimes seeds planted in the garden come up too promptly if there are fowls about. Further if fences are lacking the hens may prove a nuisance to the neighbors and cause no end of trouble. Poultry keeping certainly tests and sifts human character.

Advantages:—Breeding fine pure-bred fowls is the quintessence of poultry culture and hath advantages peculiar and particular. To its enthusiastic devotee it yields so great pleasure that, oftentimes, he forgets to consider whether it pays a financial profit or entails a loss. It is his hobby and he rides it hard. It appeals to his intelligence and calls for the best brain work of which he is capable. In striving to produce an improved strain of one of the standard breeds or in creating a new variety of fowls, there are called into play, or into *work*, the finest talents of man and such studying as Lavater referred to when declaring "It is the depth of study and not the extent of it that gives mental power". The poultry fancier is dealing with the forces of *life!* The results of his earnest efforts to win perfection according to the standard, if successful, embody wonderful beauty of plumage, splendid symmetry and gratifying gracefulness, a harmonious whole to fill the eye and heart full.

Many of the readers of *The Cornell Countryman* will remember the grandson and namesake of the founder of Cornell University, Ezra Cornell, whose untimely death some years ago, in the prime of manhood, came with a terrible shock and brought sadness to numerous friends. Ezra Cornell was, in his lifetime, the tallest man in Ithaca and the highest and best example of a true fancier that I have ever known. He was intensely interested

in the beautiful birds which his genius had developed. He brought to the developing of his feathered pets the highest qualities of mind and heart, the closest concentrated thinking, and the most thorough understanding of the life forces to be manipulated, that it has ever been my lot to witness. The Cornell strain of White Leghorns and the new variety of Wyandottes which he named the Golden Penciled and Silver Penciled, give striking proof of his power to produce, may I not say, create, beautiful as well as useful types of our domestic fowl.

Disadvantages:—The main disadvantage of the fancier's fad is the liability of failure, even after strenuous endeavor, to obtain the object of his ambition. Life is too short, sometimes, to allow of success in reaching a standard of perfection even in feathers, but the fancier's efforts are often rewarded in a most satisfying manner. In any case and whatever the outcome, the true fancier never cries "quit".

The complete Cornell countryman is born and reared on a good farm. He enjoys all the advantages of a childhood in the country. As a boy he is the pleased possessor of many farm pets and his feathered friends especially win and hold his affections. The rural school and the high school lay the foundation for his education and the natural surroundings of his home life help to round out his character. A regular course in Cornell University prepares him for the special study of poultry culture and marriage with the "best girl in the Empire State" perfects his preparation for poultry practice. He becomes a progressive, practical poultryman, the owner of a model poultry farm and proceeds to raise standard chicks and children—the two best American farm productions—in large numbers. What could be more complete?

SOME FIELD EXPERIENCES WITH BLACK ROT OF GRAPES

By Donald Reddick, G.

ACCORDING to the Census Report for 1900 New York State ranks second in the production of Grapes in the United States. In that year the total number of grapes produced for market was 247,698,000 pounds; this was exceeded only by California where the yield was nearly three times greater. An examination of the accompanying map, in which the black numbers represent million pounds, will show that we have very definitely localized grape regions within the State. This is due to soil, or climatic conditions or both.

Once the vineyardist finds a favorable location he is at considerable initial expense in getting the vineyard started and into bearing. However, by proper viticultural methods, vines brought into bearing should continue to bear for a long time or indeed practically for an indefinite period. By proper renewals and adequate attention a stock 100 years old should bear as many pounds of large berries as it did when it was ten years old.

A vineyard then is a relatively permanent investment and one engaged in such business can not transfer his operations to a more profitable field, or substitute a more profitable crop if this fail to pay. It is therefore of utmost interest and importance to the viticulturist to know "what to do" when some morning, usually early in July, he finds the fruit of his vines a blackened and shriveling mass, which the day before was plump and green and apparently in thriving condition. Such has been the experience of a great many growers in the State. Beginning in 1902 and increasing each year, a great number of growers have experienced very serious losses until, culminating in 1906, many of them

SHOWING THE GRAPE REGIONS OF NEW YORK STATE. THE FIGURES REPRESENT MILLIONS OF POUNDS.

suffered a total loss of their crop. Every one in the neighborhood of a vineyard knows just the day that the berries turned black and began to rot, and are pretty well agreed that it is the "Black Rot." As to the nature of the Black Rot however, there are nearly as many explanations and conjectures as there are individuals.

The question on all sides is, not "what is Black Rot?" but rather "what do you do for it?" The question implies the hope that there may be some great cure-all or universal remedy, the application of which would restore the dying berries to their normal healthy condition. No such happy solution is at hand however, and indeed at the present time it is only in rare cases that a plant once diseased may be restored to health and vigor. We must look to a means of prevention rather than to a cure.

It is only in rather exceptional cases that we have been able to prescribe preventive or curative measures for diseased plants, without first knowing the life history of the specific organism producing the disease or at least facts about some of its critical stages. Thus, in order to answer the question, "what do you do for it?" it is first necessary to learn something of the life history of the disease-producing organism that we may single out the critical stage or vulnerable point of attack. This leads to a sane method of approach rather than the haphazard method frequently employed.

It must not be inferred that nothing is known of the life history of the Black Rot fungus for indeed a great deal is known about it. However, from the fact that the application of preventive and remedial measures, in the hands of experienced vineyardists, suggested by former experimenters have not proved entirely successful,

BLACK ROT ON THE FRUIT

the Department of Plant Pathology has undertaken a thorough investigation of this disease-producing organism in order to become entirely familiar with all manifestations of the malady, to find out if some vulnerable point or malignantly infectious stage has not been overlooked, and to learn if there may not be some condition peculiar to our region which favors the spread of the disease. The writer was placed in charge of this investigation and at the outset it was decided that the best place to become familiar with these facts would be in the vineyard itself. This necessitated the establishment and equipment of a field laboratory where microscopic examinations could be made, cultural investigations carried on, and permanent records in the way of photographs, notes, drawings, etc., obtained.

Thus early in June 1907, the Field Laboratory was established in a two hundred acre vineyard of Niagara White Grapes near Romulus, N. Y., operated by Mr. G. G. Lansing. The loss had been total in this vineyard in 1906 and for that reason would have been an excellent place for investigation had not Mr. Lansing been so actively engaged in fighting the rot. However certain rows beside the laboratory were alloted me for experimental work and in connection with another vineyard of two hundred acres, less than a mile away, which was not sprayed and in part not cultivated, I was able to carry on infection experiments and at the same time observe the method of natural infection over a large area.

Some very interesting facts were noticed during the season. Perhaps the most important of these is the fact, that, contrary to general opinion, the winter spore or ascospore stage is not confined to a limited period in the spring but is active throughout the summer. These winter spores are borne in cylindrical sacs, eight in each sac, and these sacs in minute flask shaped cavities in the surface of the mummied berry of the previous season. When a small quantity of water is

MUMMIED GRAPES

It is from this source that most of the infections take place.

placed upon a portion of such a mummy, examination with the microscope shows that the mature sacs swell, push to the exterior, and there discharge the contained spores with some violence into the air. The spores do not all ripen at the same time and I was able to obtain cultures from this source as late as August 15th.

It will thus become apparent that with each rain there will be a discharge of these spores into the air and if such rains are followed by cloudy or foggy weather the appearance of a new infection may be predicted with certainty in from 8 to 14 days. The first three infections of 1907 were almost entirely from such a source.

An ascospore falling on a stem, leaf or fruit will, if moisture and atmospheric conditions are right, produce a germ tube which penetrates the tissue. This branches and grows by the absorption of nutrient materials, sap, etc., thus forming the mycelium of the fungus. In the course of three weeks this mycelium fruits, i. e., bears an enormous number of summer spores or propagative bodies. These are capable of reproducing the disease and are the chief source of the widespread and general infection. In 1907 they were of little avail owing to the continuous extremely dry weather.

Another interesting fact in regard to these summer spores was observed. Very frequently stems and tendrils as well as leaves are attacked and in due course of time bear a crop of the summer spores. Curiously enough these spores are not always discharged but lie dormant over the winter. The following spring they are still capable of germination and may produce infections at that time. Most of the infected wood is removed in trimming but it is a difficult task to remove the tendrils from the wire.

One very vexing but withal most interesting problem presented itself. Although several thousand artificial infections, both of summer and winter spores, on leaves of all ages and fruits of various sizes and under various conditions were made, not a single, definite, positive infection was obtained. From the literature however, I find that I am not the only unfortunate along this line, and there is some satisfaction in that.

The following season is to be spent in the field where former observations will be duplicated and new or unfinished experiments completed.

THE COUNTRY ROAD AND THE PATH MASTER

By J. Demary, Sp.

THE papers and magazines at the present time are full of great schemes to be worked out on our highways both local and national: they are to be for the benefit of the auto, the pleasure seeker, the pedestrian, the city man and the fellow who uses them three hundred sixty five days in the year—the farmer. With all this clamour it seems ungrateful to suggest that the present generation must worry along with present conditions and that the sanest thing is to make the best use of them without, however, being bound by tradition to put up with unscientific treatment, no matter how "orthodox."

There are roads and roads, pitch-like clays, where the wheels grind on solid rock and hopeless sand. It is useless to formulate any definite treatment suitable for all, but each in its location should be studied and its drawbacks avoided. The State may enact road legislation and issue bonds galore but in the majority of cases it is "up" to the people of any given locality to build or maintain the highways as we find them, say at eleven P. M. in the month of April.

The road question is a local one. No amount of "thoughtful consideration" given to the subject in a comfortable hotel with a paved street and a trolley outside will remedy "that big mud hole on the creek road" like a hundred loads of good gravel. Scarcely ten per cent of the highways of New York State will be macadamized in the next ten years and with

the present conditions it would seem very practical to give some training in the most efficient use of the ordinary materials as we find them along or near by the country roads.

While it is perfectly feasible for the State Engineer to map out a road system with First, Second or Third class highways, taking the macadam road as the standard and its construction more completely under his jurisdiction, when you remove from the people of a locality their responsibility and authority and attempt to direct matters from a crowded central office you destroy their personal initiative and moreover are attempting to kill a cat with an eleven inch gun. When it is "up" to the people of a township to wade through a mudhole of their own suffrance it takes them where the harness is worn.

Therefore let us consider the township road. In New England where the writer was reared, the road commissioners are elected each spring for a term of one year, in number proportionate to the size of the town. Politics and the candidate's capacity for furnishing teams are leading factors in his selection ; civil engineering cuts no figure and a rough and ready treatment of the highway results : no itemized account of expense per mile is kept or specific repairs made but these are lumped with the general account. There is no record whether the roads are in better condition or worse by years and any extra writing is avoided as much as possible, the result being that while the grand total of the cost of roads and bridges is known, the various items are as vague as those of a railroad company are clear.

From a practical standpoint the highways of a township should be mapped to a certain scale, say eight inches to one mile and furnished with a key showing the various bridges, culverts, hills, gravel pits, etc., and a basis formed for reference in estimating the cost of definite repairs and probable expenses in the future. The map will serve for many years and the roads will survive their users.

Iu New York the Highway Commissioner is elected by a different system and is responsible to the County Supervisors but the local man has his place and his selection is sanctioned by the people who used the roads under his control. He ought to be a man who has some civic patriotism outside of his job and who is not impervious to reasonable suggestion; he ought to have some knowledge of simple surveying and engineering, for to continue to use a steep grade for no reason beyond tradition shows a lack of progres. He should have some practical knowledge of the geology ot his section and a good comprehension of the fitness of the local rocks for use in the road bed. It frequently happens that a gravel bank may be convenient but composed of disintegrating shale and hence unfit for a permanent foundation. In short he should be "onto his job" and be willing to accept any new information that can be conveniently and practically used in his work and lastly his pay should be in proportion to his ability and fitness for the position.

There is great need at present for more definite and complete information not only on the new stone roads, but the present dirt and gravel ones that the farmers are still using. There are the burnt clay roads in the South, the King Drag idea "from Missouri," the snow rollers used in the extreme North, such devices and others of like value should be made more of a feature in the present Institute work, especially in sections where the prospect of State aid is very remote.

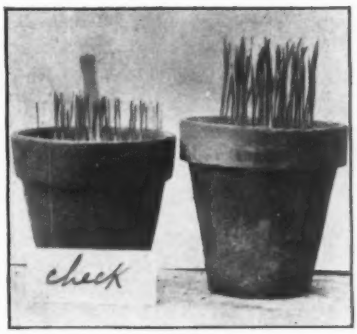
It is useless to talk of millions. It is over the head of the man to whom $10,000 is independence, but anything which will help him to get into town with a fair load of produce is much more to the point. The man who has to use the country road "in his business" is entitled to all the help possible in making the best use of them. He has to use them in November and April, and frozen ruts and mud do not "correlate" with poetry. The city man takes his outing in June with his auto and tells the magazines all about it !

ETHER AND THE GERMINATION OF SEEDS

By J. Taubenhaus, '08

THE object of this experiment was to determine the effect of ether upon the germination of old and new seeds. The process of etherization was carried on in the same manner as with the bulbs, as has been described in earlier issues of *The Countryman* and the ether used was the same kind of sulphuric ether.

The following table gives a graphic representation of some of the results obtained in a 75°F hothouse:



EFFECT OF ETHER ON WHEAT

Seeds	Age Years	Etherized	Sown	Germinated	
				Etherized	Check
Tomato	5	Dec. 13	Dec. 14	Dec. 28	Dec. 30
Early Purple Turnip	2	"	"	" 26	Dec. 30
Early Purple Turnip	new	"	"	" 17	Dec. 19
Cucumber	3	"	"	" 26	Dec. 30
Cucumber	new	"	"	" 19	Dec. 22
Muskmelon	2	"	"	" 20	Dec. 23
Muskmelon	new	"	"	" 20	Dec. 22
Asparagus	new	"	"	" 30	Jan. 2
Cabbage	4	"	"	" 25	Dec. 29
Wheat	new	"	"	" 20	Dec. 22

No attempt was made to determine the per cent germination, as equal parts by weight only, of the treated and untreated seeds were used. As soon as germination began, it was evident that the etherized seeds started earlier as the table indicates. Moreover, it was seen that while about half of the old seeds sown germinated (tomato and cabbage) when etherized, only about one-third of the check seeds of the same kind started.

Of the later seeds, the germination was equally heavy, though in all cases those etherized germinated first, and produced the stronger seedlings. Is it not fair to suppose that plants which have a better start, which look healthier and more vigorous will, in the long run give better produce? The accompanying illustration shows the remarkable difference in the case of wheat, a difference which was equalled with practically each kind of seed.

Thus we would conclude that the sulphuric ether treatment seems to put new life into old seeds; that it seems to hasten the germination of all the seeds tested; that the seedlings from etherized seeds are stronger than those from untreated seeds; and that, since in a medium house no results were obtained, a hothouse temperature is necessary for this process.

The Cornell Countryman

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MARCH, 1908

To a Graduating Class

THREE months ago we welcomed the incoming Short Course classes and attempted to express the congenial feeling and good fellowship which awaited them. Today, at this time, their twelve weeks are over. They are returning or have returned to their work, and, we hope, with larger ideals, broader, better ambitions and greater powers to live up to them. To the Short Course classes as a whole, we extend our hand with every wish for success, prosperity and accomplishment in the future; and a sense of appreciation of their work, and activity and spirit while here. We congratulate those men who reached responsible offices, made places on debate teams and all other organizations. We congratulate likewise those men who did not make the teams, but who tried for them. Their efforts were not fruitless, their energies far from wasted, and they should, harder than ever, go at the problems that confront them, in no wise discouraged but with ever a stronger determination to make good—as make good they can. And finally we congratulate all the rest—whether they became known through their activities or whether they remained obscure—for coming here to learn and develop. They too, have accomplished things already, and have gained in their life and work here, benefits that are undeniable—even though they may not realize it. And once again we wish them, one and all, success; not mere wealth, or an easy, comfortable, smooth-sailing existence. But we wish them *success*, activity, growth—the power to accomplish the tasks assigned them, to add their part, whatever it may be, to the good of the world; to make themselves more useful as Americans and farmers—better as men.

A Desirable "Stitch in Time."

IN the face of the high general standard of scholarship which the College has justly felt to be one of its characteristics, the reception of the many delinquent scholarship, or more familiarly, "bust" notices, by its students, came most unexpectedly. It was with relief, though with somewhat a touch of chagrin, that the recipients learned that the condition of affairs had resulted from the failure of several departments to get grade marks to the Registrar in time to have them entered on the cards. We come to realize sooner or later that in college the mere marks on a "report card" lose much of their elementary school import, and that they should be but a slight factor among the motives for industry and study. But in cases like these a delay or a failure to be on time results in an extremely considerable increase of work, loss of time and confusion in the administrative offices of the Uni-

versity. We endeavor to be fair and to appreciate all the delays and unexpected exigencies which may easily cause the overthrow of even "best-laid plans," but we would suggest that the extra work and effort that might be necessary at first, would be more than outweighed by the convience and benefit that would later lighten the more complicated duties of others, as well as save many persons unnecessary dismay and excited investigation.

The Stage

When Professor Tuck's course in Extension Methods was started last fall, with a somewhat indefinite idea of introducing a few students to the work of addressing farmers' meetings and of giving them some proficiency in thinking and expressing their thoughts "on their feet," it was little expected that one of its developments would be the institution of an agricultural "Stage." And it is with interest and pleasure that we have watched the growth and development of the idea. The students with characteristic vigor, entered into it with enthusiasm and decision, and though the preliminary contest was held upon an evening of most inclement nature, twenty-three out of the twenty-six contestants were on hand. Of these, as is already known to many, six speakers were chosen by a trio of faculty judges. And at a later date these six competed for the two prizes generously donated, and for the right to speak during Farmers' Week. This activity is wholly new in this college, and so far as we know, unknown in any of the other colleges of the University. But its novelty is no hindrance to the good it can accomplish. It fosters so called "public-speaking" which in this case means more than the name implies; it opens up a new field for any number of students and its valuable training can aid certain men in their efforts toward University oratorical honors as well as prove of great value in later days. As we have already said of other activities—this is a new one, it has been successfully founded, let us now see it grow and prosper as a regular institution of the College life.

Wanted—A Name

As we think of it, the idea occurs, *What* is the subject of the above editorial? "The Stage!" Yes, but *what* stage? In what way can we refer to the contest, this new form of activity so that it is distinctive and representative. Clearly a name is wanted—one that will carry both agricultural significance and the memory or thought of some person, event, or institution. This is a question upon which every person interested should at least have opportunity to express his opinion and it seems eminently fitting that the matter be discussed either in the Agricultural Association, or through some medium wherein the faculty as well as the whole student body may gain utterance. The *Countryman* will be glad to receive any ideas, suggestions or sentiments along this line, and will communicate them to those who are in a position to further promote their discussion.

Erratum

The *Countryman* regrets the necessity of acknowledging a serious error in its columns; but eager-

ly takes this opportunity to bring it forward and to correct it. In an article by Mr. Taubenhaus, on Sulphur Treatment for Powdery Mildew, published on page 132 of the January issue, the word Flax was incorrectly used in place of Phlox. The latter should therefore be understood in every case where the former appears throughout the article.

GENERAL AGRICULTURAL NEWS

The American Society of Agronomy was organized in Chicago on December 31, 1907. According to the constitution, the object of the society shall be the increase and dissemination of knowledge concerning soils and crops and the conditions affecting them. It is expected that the membership will be composed largely of scientific workers in agronomy. A strong feeling has been prevalent for some time that an opportunity is greatly needed for college and station men to meet and discuss methods of experimentation and instruction in agronomy. Provision has been made for including as charter members all who join the society before July 1, 1908. Arrangements were also made by which local sections may be established in any part of the country on application of three members of the society. The agricultural colleges may thus have local organizations for discussion of agronomic subjects. By resolution the society expressed its desire to assist the Society for Promotion of Agricultural Science in bringing about affiliation of all the scientific agricultural organizations. The officers for the present year are as follows: President, M. A. Carleton; First Vice-President, C. P. Bull; Second Vice-President, J. F. Duggar; Secretary, T. L. Lyon; Treasurer, E. G. Montgomery.

* * *

At a recent meeting of the Board of Trustees of the Iowa State College Mr. C. A. Scott of the United States Forest Service was elected to the Chair of Forestry to fill the vacancy caused by the resignation of Professor H. P. Baker who accepted a more lucrative position at the Pennsylvania State College. Mr. Scott is a graduate of the Kansas Agricultural College and a student of the Yale College of Forestry. Mr. Scott has been continuously in the employment of the Forest Service since graduation and during this period of seven years has gradually advanced through all stages of the work from that of Student Assistant to Forest Supervisor, which position he resigned to accept the Chair of Forestry at the Iowa State College.

* * *

The Missouri Experiment Station at Columbia has just issued a very elaborate and handsomely illustrated bulletin on the most successful methods of fattening cattle, by Dean H. J. Waters. He summarizes the experience and conclusions of about 1000 of the most experienced and successful cattle feeders of Missouri, Illinois, and Iowa, and adds also a summary of the results of a large number of tests with different kinds of feed, different ages of cattle, etc., conducted by the Experiment Station at Columbia. The bulletin considers such practical questions as the most profitable age to fatten cattle, the proper weight, the best season of the year, the best method of preparing feed, the best sort of shelter, the market demands, the best sort of roughness, etc. It is illustrated with cuts of the different types of beef cattle, including excellent illustrations of the fat steer herd exhibited by the College this season.

* * *

Now that the Jamestown Ter-Centennial Exposition has closed, all eyes

are turned toward the next great world's fair, the Alaska-Yukon-Pacific Exposition which will be held at Seattle, Washington, opening June 1, and closing October 15, 1909. This exposition will be held in a section of the country where world's fairs are new and for that and many other reasons it is expected to be a success, beneficially, educationally, artistically and financially. Work on the grounds and buildings of the exposition is well under way and the management is determined to have everything in readiness by opening day. This has been written about all expositions in late years, but the promise has never been completely fulfilled. The officials of the Alaska-Yukon-Pacific Exposition, however, have started out with a completed-on-opening-day idea above everything else, and if they do not carry out their plan it will not be because western energy has not been expended in the task. The Alaska-Yukon-Pacific Exposition promises to be different from former world's fairs in many ways, but one policy stands out so far above any of the rest that the entire press of the country is commenting favorably about it. No money will be asked from Uncle Sam to carry on the work! That policy must be conceded as original.

* * *

The Interstate Breeders' Association will hold its annual meeting at Sioux City, Iowa, March 5th to 7th. This years's meeting will be one of unusual interest, and a very instructive program has been prepared. Among other subjects that are of great interest to breeders and farmers at this time, bovine tuberculosis will be taken up. This will be presented by Dr. J. H. McNeil of Iowa Agricultural College, Ames, Iowa, Dr. G. A. Johnson of the U. S. Bureau of Animal Industry, and Professor H. R. Smith of the Nebraska Experiment Station.

* * *

Agricultural co-operation to secure farm labor is now being practiced by many farmers in Europe. In Belgium this has assumed large dimensions, and over fifty thousand farmers are members of federations whose duties include among others the supplying of farm help. In this way it is hoped that a fairly practical solution of this vexing problem may be secured, and matters placed on such a basis that the farmer can always secure good help and the laborer always obtain a position.

CAMPUS NOTES

Dr. Thomas Darlington, President of the New York City Board of Health, spoke before an audience that crowded the lecture room in Stimson Hall to its utmost capacity on January 18. Dr. Darlington appeared under the auspices of the colleges of Medicine and Agriculture, and spoke upon "The Relation of the Milk Supply to Public Health." Mr. Burton, Chief Inspector of the Dairies supplying milk to New York, presented lantern slides showing views of the handling of milk in the seven links of the chain from the cow to consumer—the dairy, farm milk wagon, shipping station, milk train, milk depot, store, and home—links, all of which must be watched by the Board of Health. Dr. Darlington said that the milk of only 47 of the 3,5000 dairies supplying the city has been denied sale in the city, and that for only a short time. The state should test every cow within its borders for tuberculosis and reimburse the owner for all cows that it is necessary to kill. Experience shows that solely from an economic point of view it pays the farmer to produce clean milk, but more than that he is under moral obligation to do so, for the fundamental principle underlying its production is the great law "Thou shalt love thy neighbor as thyself."

* * *

Professor B. M. Duggar, of the Department of Plant Physiology has taken Professor Craig's house on East Avenue, the latter having left for a trip through the Orient early in February.

On the evening of February 5th Dean Bailey sustained a painful, but happily not a serious, injury in leaving the buildings at about eleven o'clock. He slipped on the path leading to the Veterinary building and striking his head was severely stunned. He was assisted back to the building, and later taken to his home, where he was confined for the remainder of the week. Beyond the shock and the temporary injury, however, we are glad to say that his experience had no serious effects. The Assembly announced for the next evening was at this time indefinitely postponed.

* * *

Readers of *The Countryman* will be sorry to learn that W. H. Griffiths, who early in the fall fractured two bones in his ankle, is still confined to his bed in the Infirmary. Recovery did not set in as soon as expected, and he has at no time had the use of his foot. We are still hoping, however, that he will be out before spring comes.

* * *

On February 4th, the Agricultural Association meeting was made extremely interesting and profitable by a talk by Mr. Myron T. Scudder on "Play as a Socializing Factor in Rural Districts." Mr. Scudder, who is School Principal in New Paltz, is an authority upon this subject, which is coming to the front with the other features of rural improvement. It is but another means whereby the country, and therefore the farm life can be made to appeal to the children on the farm, and to help keep them there.

* * *

Changes and completions are still being made in various parts of the buildings. Extensive carpentering work is being carried on in the Plant Pathology and Experimental Biology laboratories, and improved mail-chute arrangements, together with a system of private mail boxes, have been installed outside the general office.

At the meeting of the Western New York Horticultural Society held January 22–23, in Rochester, Professors Craig and Judson were in attendance, and Professor Judson gave an address on fruit packing. During the noon recess following the talk, Professor Judson and W. H. Wickson gave a demonstration in packing apples in boxes which aroused great interest.

* * *

Several members of the faculty and several students have recently become members of the local grange and others intend to join at an early date. The Winter Course students had charge of the programme of the meeting of the local grange on February 1.

* * *

The College of Agriculture has been sending out through the State a limited number of sets of apparatus for making the Babcock Test. There has been great demand for these sets by teachers in rural schools, and some teachers have had the pupils make demonstrations at grange meetings. It is quite significant that teachers in rural schools are now ready to take up definite instruction in Agriculture.

* * *

Charles A. Publow, assistant in the Cheddar cheese making course, after taking an agricultural course at the Guelph Agricultural College, graduated from Queens' University in 1906. He has had twelve years' experience in cheese making including four years as government instructor in Prince Edward and adjoining counties, and one year as inspector of exports at Montreal.

* * *

Mr. O. G. Bishop, of Pontiac, Mich., who has made considerable reputation as a market gardener, was here during the week of January 13, when he gave several talks on vegetable gardening as well as an interesting address on plant breeding before the Plant Industry Seminar.

During the last month Professor Rice spoke on various Poultry subjects at the Ontario Agricultural College, Purdue University, Pennsylvania State College and the Ohio State University.

* * *

The James W. Morrison Inter-Winter Course Debate Cup valued at twenty-five dollars, is offered, for the first time, this year. It is being competed for by the different winter course students and will remain for one year with the department whose team wins it, the names of the successful contestants being engraved upon it.

The students have taken a lively interest in the contest which began with a debate between the General Agriculture and the Dairy classes, upon the topic, Resolved: That dairy farming is a more desirable occupation than general farming. This was won by the negative side. Later the team from the Poultry Course won from the Horticulturists, in defending their respective occupations. The finals were held later in the course and the winners will be announced later.

* * *

On the evening of February 10, a basketball game was held between teams from the Winter Poultry and Dairy Courses. After a most hotly contested and enthusiastic struggle the score stood 13 to 11 in favor of the Poultrymen. Great interest was shown in the game and the Armory was well filled with rooters for both teams, and the strenuous renditions of their new and varied class yells.

* * *

As we go to press we learn the result of the First Agricultural Stage on February 12th. The winner was H. Lubin, '08, and second choice was given to M. P. Jones, '08. Further notice of this event will be published in the April issue.

FORMER STUDENTS

EDITOR'S NOTE.—We want to make the "Former Student" news one of the most interesting parts of the paper. To do this we are dependent on those who have graduated or left college sending us news of their whereabouts and of what they are doing. We try to write each personally but this is a difficult task. You can save us time and expense by voluntarily sending in items of interest frequently. Won't you coöperate with us in making this the most complete part of the paper?

'73, B. Agr.—Mr. Chas. Y. Lacy was the first man to receive the degree of B. Agr. from Cornell University. With thoughts of our recent pleasant reunion in our minds, an account of the life of this pioneer in agricultural education for the farmer, seems eminently appropriate. We shall leave him to tell his own story.

CHAS. Y. LACY

"I was born on a farm in Monroe county, New York, in 1850 My mother was English, coming to this country with her family while yet a young girl. My father was American through many generations of ancestors. He was a farmer and always deeply interested in theories relating to farming, in improved farm machinery and improved methods of cultivating the soil.

"I began my acquaintance with farm work rather early in life. I re-

member driving two horses before a harrow for half a day when seven years old; doing the same thing day after day for weeks when eight; and driving a mowing machine at ten. My recollection is that I rather preferred this work to the study of books either at home or at school. Nevertheless, under the spur of rivalry with a play- and schoolmate and persistent parental urging I acquired a fair knowledge of the elementary English branches. I also acquired, without any urging, the absurd notion that this was sufficient education for a farmer. The opening of Cornell University with courses of study in agriculture suggested the advantages of some additional study in that direction. With such slender attainments generally, and no special preparation, I was admitted, with some conditions, to the two years' course in agriculture in September, 1869.

"From the above statements it will readily be seen that there was ample room for expansion of ideas. The great number and variety of studies presented by the different scientific and agricultural courses made my previous notions of an education look modest indeed. The attainments, abilities and ambitions of my classmates contributed to the same view. It was not long before it appeared exceedingly desirable to complete a four years' course. And to teach agriculture in some of the agricultural colleges then being organized did not seem any real abandonment of former plans. It is but fair to state that the chief encouragement to this ambition lay more in the scarcity of teachers having any training whatever in the sciences relating to the practice of agriculture rather than in fitness and preparation on my part.

"After receiving my diploma, in June 1873, the first "B. Agr." conferred by Cornell University, I returned to work on my father's farm in Caledonia, N. Y. I also taught country school in the Inverness district in the same township during the winter of 1873-4, and the following summer made a somewhat extended tour of agricultural colleges, going west as far as Kansas.

"In November, 1874, I secured a place in the Agricultural College of the University of Minnesota, where I was later appointed assistant professor and then professor, in charge of Agriculture, and where I continued until June, 1880. The warm welcome and kindly consideration extended by every person I met in Minnesota will linger long in my memory. With the members of the Minnesota State Horticultural Society my relations were very cordial and I was immediately elected secretary of the Society and was annually reelected until removal from the state. An honorary life membership bestowed upon me by it is an honor I greatly prize. Editing the proceedings of this Society while its secretary is the principal work done with my pen.

"In 1880 I entered upon new scenes and new experiences incident to the business of sheep raising and wool growing on the open range in the valley of the upper Missouri river, near Fort Benton in Northern Montana. Agriculture was almost entirely confined to grazing. Cattle and horses roamed wheresoever they would unconfined by fences and untended by herders. The business was for the most part prosperous and remunerative, but suffered a severe blow from the removal of the duty from wool in Cleveland's second administration, when many wool growers, including the writer, were seriously embarrassed or pushed to the wall. It was while living in Montana, in 1888, that I was married to Miss Ella F. Peck of Providence, R. I. From Montana I moved, in 1899, to Southern California and I again found myself mid surroundings and a mode of living strikingly different from any former experience.

"In conclusion it may be pertinent to state in reply to questions sometimes asked that I have never for a moment regretted the time and money spent in my four years' course of study in agriculture. Possibly it has not contributed very much to an indifferent success in money making.

Certainly it has never been a hindrance even in that direction. And with equal certainty it has given me a standing everywhere with people that I have met and a pleasure in that standing that I could not have had otherwise. Moreover, every task that has come to my head or hand has been more interesting because of the instruction received in the facts and principals of nature and civilized living. As a matter of fact the farmer, intelligent or otherwise, lives closer to these facts and principles than most other men. If intelligent he becomes acquainted with such facts and principles with both pleasure and profit. No courses of study are better designed to promote this acquaintance than the courses in agriculture."

'07, B. S. A.—W. J. Morse, who is in charge of the Forage Crop Experimental work carried on by the Bureau of Plant Industry, U. S. Department of Agriculture, is specializing in the breeding and improvement of the grasses on the government farm at Arlington, Va., a few miles out of Washington. While at Cornell Mr. Morse did special work with grasses and took his thesis in "Weed Seeds as Adulterants of Clover and Grass Seeds." He writes that he has found his preparation of great value in his work which he finds exceedingly interesting and enjoyable.

'94, W.—W. G. Comstock since leaving Cornell was secretary of the Chuckery Creamery Co., at Clinton, N. Y., until January 1, 1908. He sold his interest in the business in June, '07, remaining with his successor until the first of the new year. He expects to go into business with his father on his fruit farm, managing a dairy and poultry farm in connection with it.

'97, W.—U. G. Clark has successfully followed the creamery business as manager of plants for Major Root and the Sheffield Farms up to April '05, at which time he became superintendent of the Wood Brook Farms, Plainfield, N. J. This farm sells daily, 900 quarts of milk at ten cents a quart, and 200 half-pints of cream at fifty cents a quart. The Board of Health scored the dairy 97 points in 1907. Mr. Comstock hopes for a score of 100 for 1908.

'06, Sp.—George T. Reid of Tennent, N. J., was married Dec. 28, '07, to Miss Emma T. Clayton. Mr. and Mrs. Reid are now living on the home farm.

'06, Sp.—Fernando Ortiz de Zerallos has charge of the Department of Agricultural Machinery in the Lima branch of W. R. Grace & Co., New York City.

'07, W.—Fred E. Tyler has a position on the one hundred and fifteen acre farm of E. M. Sheldon at Martinsburg, N. Y.

'07, W.—Floyd S. Platt, a former student in Horticulture, is now with W. H. Moon Co., Morrisville, Pa.

'07, Sp.—Walter C. Knapp was married December 26 to Miss Maude A. Rowley of Fabius, N. Y. Mr. Knapp is having marked success in the breeding of Holstein cattle and White Leghorn fowls.

'07, B. S. A.—John B. Shepard, who has been managing a farm near Philadelphia, has resigned his position. After a couple of months' vacation he will assume a new position—that of superintendent of the large onion farms of Johnson & Co., a large Orange County Corporation. This company has 400 acres of black muck on which onions will be grown. Mr. Shepard will have entire charge of the work and will have a large force of foreign laborers under his command. As additional preparation for his work he has been visiting the large onion farms near South Lima, and has spent a few days here at Cornell.

'06, B. S. A.—Emilio Artiz de Zevallos has bought a dairy farm of about 500 acres near Lima, Peru, and is devoting himself to the milk and cattle business, sending his milk to the capital. Mr. Zevallos is devoting his attention to the prevention of Texas fever by farming methods and we hope to hear from him sometime in the future on this subject.

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